Heart Rate Math
Lesson 3 of 3

Grade Level: K-4
Subject: Life Science
Prep Time: <10 minutes
Activity Duration: 45 minutes
Material Category: General Classroom

National Education Standards:				
Science	**Mathematics**	**Technology**		**Geography**
		ISTE	**ISTA**	
	1b, 1c, 6			

Objective:
The students will calculate the number of heart beats of various age groups for differing amounts of time.

Materials:
• Student sheets
• Pencil

Related Links:

How Does Your Heart Rate?
http://www.lessonplanspage.com/ScienceHowDoesYourHeartRate24.htm

Listen To Your Heart Beat
http://www.iit.edu/~smile/bi9305.html

Straight From The Heart
http://www.iit.edu/~smile/bi9514.html

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Heart Rate Math
Student Sheets

Name: _____

Objective
The students will calculate the number of heart beats of various age groups for differing amounts of time.

Materials
• Student sheets
• Pencil

Procedure

1. Your teacher will explain how you can figure out your heart rate.

2. Everyone's pulse (average heart rate per minute) changes as we age. Here is a chart of average pulse per minute at different ages:

Age	Pulse
Newborn	130
3 months	140
6 months	130
1 year	120
2 years	115
3 years	100
4 years	100
6 years	100
8 years	90
12 years	85
adult	60 - 100

If you wanted to know how many times a 3 month old baby's heart would beat in 8 minutes, you could figure it out by multiplying.

Think: A 3 month old baby's heart beats about 140 times in one minute, so how many times would it beat in 8 minutes?

$$140 \times 8 = 1{,}120$$

So, a 3 month old baby's heart would beat about 1,120 times in 8 minutes. That is a bunch of times, isn't it?

Now you try it.

Use the chart to figure out what each person's pulse would be.

1. A four year old boy's heart would beat how many times in five minutes?

2. A newborn baby's heart would beat how many times in two minutes?

3. An eight year old girl's heart would beat how many times in nine minutes?

4. A one year old baby's heart would beat how many times in four minutes?

5. A twelve year old girl's heart would beat how many times in seven minutes?

6. A three month old baby's heart would beat how many times in three minutes?

7. THINK!: An adult's heart would beat between how many times in two minutes?

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Pre-Lesson Instructions

This lesson might make more sense if lesson 2 is done before this one. If lesson 2 is not done prior to this lesson, the students could still calculate the math. However, they may not understand the why if they have not completed lesson 2 prior to this lesson.

Background Information

The average heartbeat is 72 times per minute. In the course of one day it beats over 100,000 times. In one year the heart beats almost 38 million times, and by the time you are 70 years old, on average, it beats 2.5 billion times!

Everyone's pulse (average heart rate per minute) changes as we age. Here is a chart of average pulse at different ages:

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8 years	90
12 years	85
adult	60 - 100

Students will use this chart to calculate how many heart beats have occurred for various age groups within a certain amount of time.

Guidelines

Read article "I Have The Heart Of A Rocket".

1. Explain to the students that they can measure their heart rate, also called a pulse. Remind them how to calculate their pulse. (See lesson 2.)

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2. Show the students the chart that lists the average pulse per minute at different ages.

3. Go over the following information with the students:

The chart below shows the average pulse per minute for people of different ages. You can use the chart to figure out how many times a person's heart beats in a certain amount of time.

Age	Pulse
Newborn	130
3 months	140
6 months	130
1 year	120
2 years	115
3 years	100
4 years	100
6 years	100
8 years	90
12 years	85
adult	60 - 100

If you wanted to know how many times a 3 month old baby's heart would beat in 8 minutes, you could figure it out by multiplying.

Think: A 3 month old baby's heart beats about 140 times in one minute, so how many times would it beat in 8 minutes?

$$140 \times 8 = 1,120$$

So, a 3 month old baby's heart would beat about 1,120 times in 8 minutes. That is a bunch of times, isn't it?

You may want to work a few more examples before having the students calculate the seven problems on their student sheet.

Answers to student sheet:

1. 100 X 5 minutes = 500 beats
2. 130 X 2 minutes = 260 beats
3. 90 X 9 minutes = 810 beats
4. 120 X 4 minutes = 480 beats
5. 85 X 7 minutes = 595 beats
6. 140 X 3 minutes = 420 beats
7. 60 X 2 minutes = 120 beats **and** 100 X 2 minutes = 200 beats,
   SO it would beat between 120 and 200 beats in two minutes.

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Extensions

1. Using the numbers in the chart, have students draw a bar graph to represent the average pulses.

2. Using the numbers in the chart, have students draw a line graph to represent the average pulses.

3. Using the numbers in the chart, have students draw a pictograph to represent the average pulses.

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